COMMANDERS DIGEST

The Three-Fold Mission Of The ARMED FORCES INSTITUTE OF PATHOLOGY

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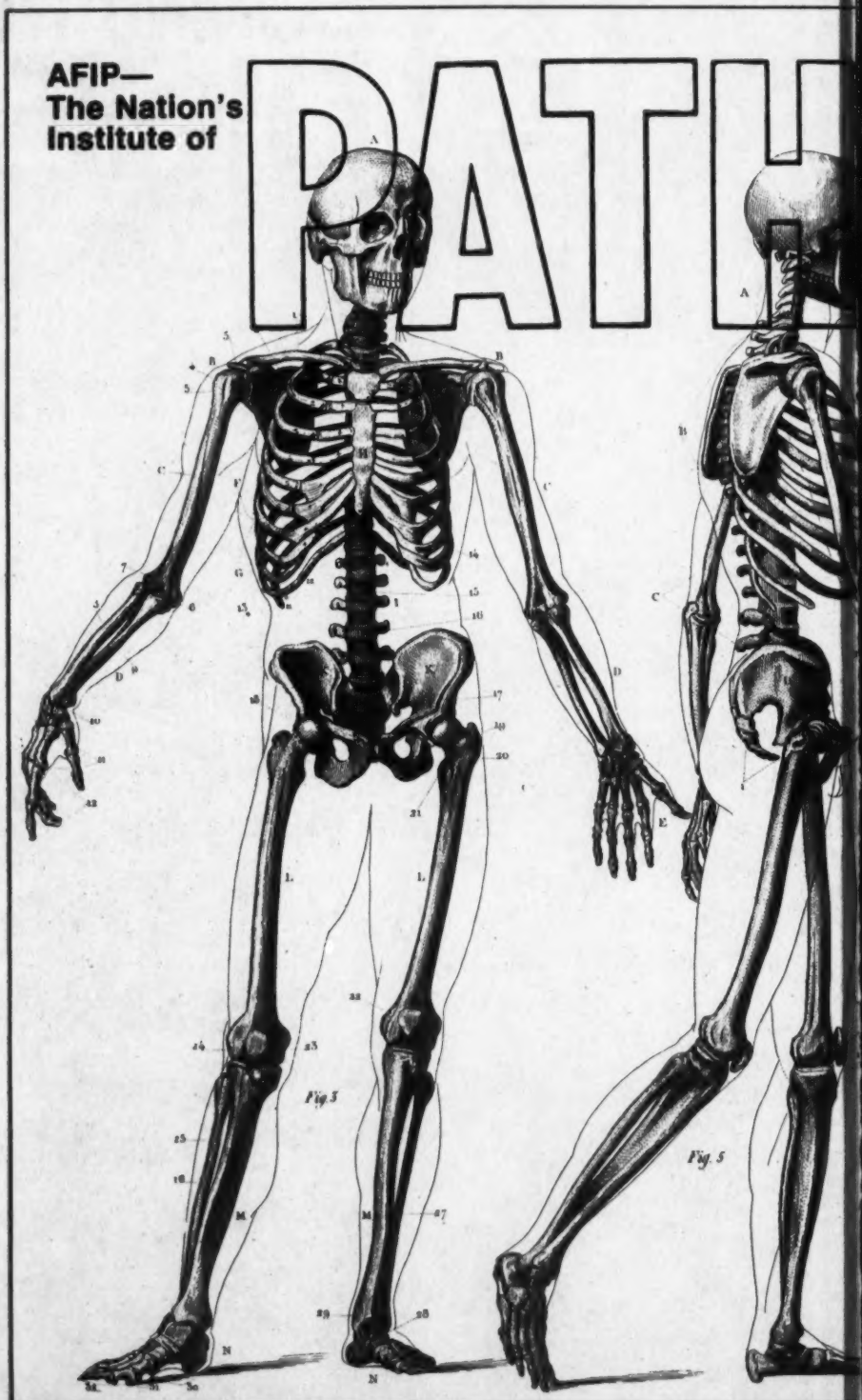
AFIP—The Nation's Institute of PATH



The Nation's leading laboratory of pathology is a Department of Defense (DoD) activity chartered to accomplish a three-fold mission of consultation, education and research—the Armed Forces Institute of Pathology (AFIP).

The institute is not totally military, serving both governmental and civilian organizations throughout the Nation and the world, drawing on computerized cases for consultation, education and research. A staff, of which 127 are at the doctorate level, studies the etiology and nature of disease and injury, from the age-old problem of leprosy to such modern concerns as cancer, sickle cell disease, radiation injury and drug toxicity.

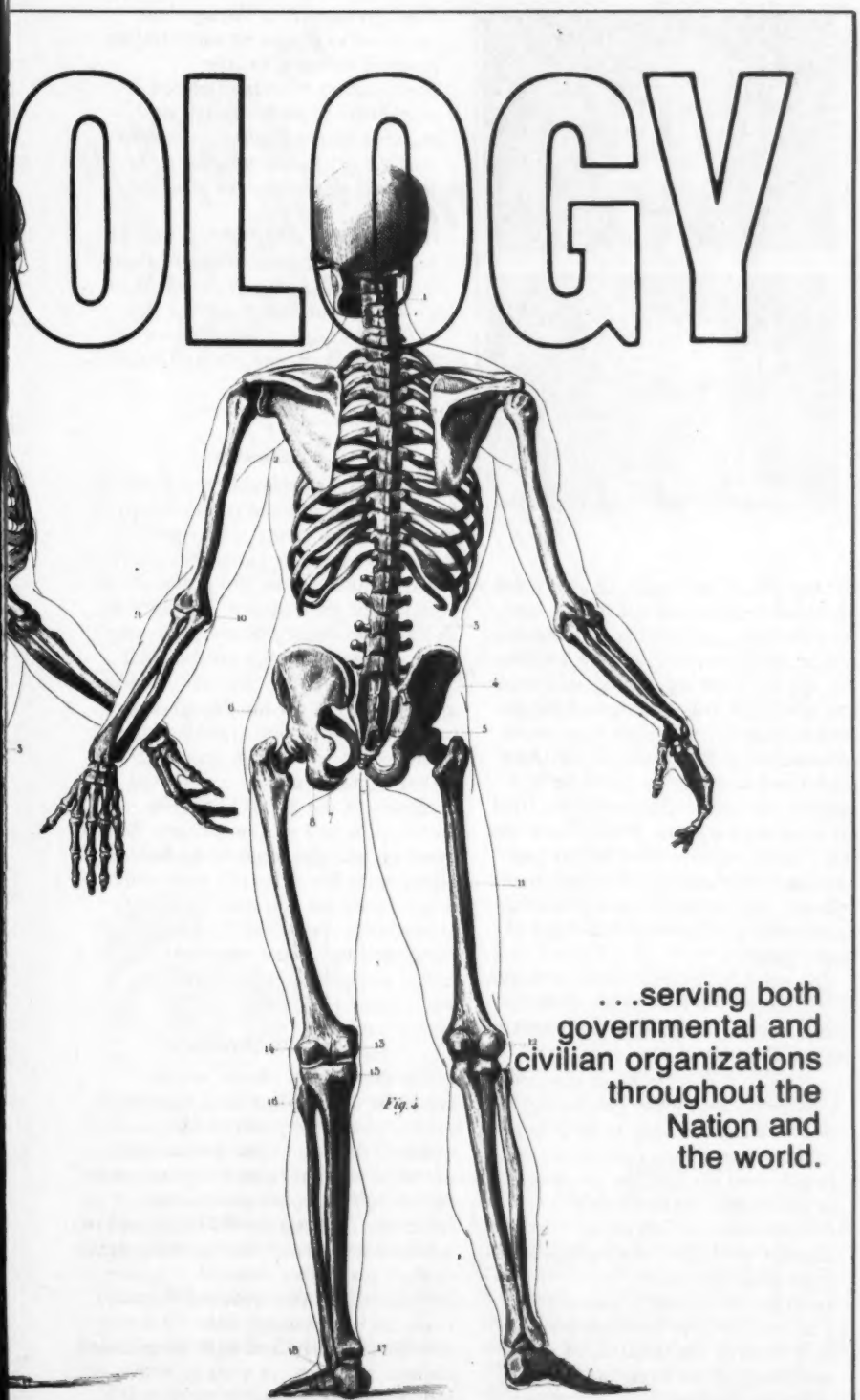
This staff, by the variety of its components, reflects the support given to, and in turn provided by the three Military Departments. In addition to officers and enlisted men of the Army, Navy and Air Force, the professional and supporting staffs contain Civil Service and Veterans Administration employees, as well as a number of civilians hired with funds provided by civilian research grants.

AFIP Charter

The institute's official charter, as implemented by DoD Instruction 5120.30 and the Tri-Service directive jointly numbered AR 40–31, BuMedInst No. 6510.2C and AFR 160–55, reads as follows:

The Armed Forces Institute of Pathology is chartered by the Department of Defense to:

- Maintain a consultation service for the diagnosis of pathologic tissue.
- Conduct experimental, statistical and morphological researches in the broad field of pathology.
- Provide instruction in advanced pathology and related subjects.
- Train enlisted personnel of the Armed Forces in pathologic techniques and relevant activities.
- Prepare, procure and duplicate teaching aids.
- Loan pathologic,



photographic and other educational material to the Federal medical services, museums, medical schools, scientific institutions and to qualified professional individuals.

- Operate the American Registry of Pathology as a cooperative enterprise in medical research and education between the Institute and the civilian medical profession.
- Maintain a medical illustration service for the collection, preparation, duplication, publication, exhibition, reference and file of medical illustrative material.
- Maintain medical museums.

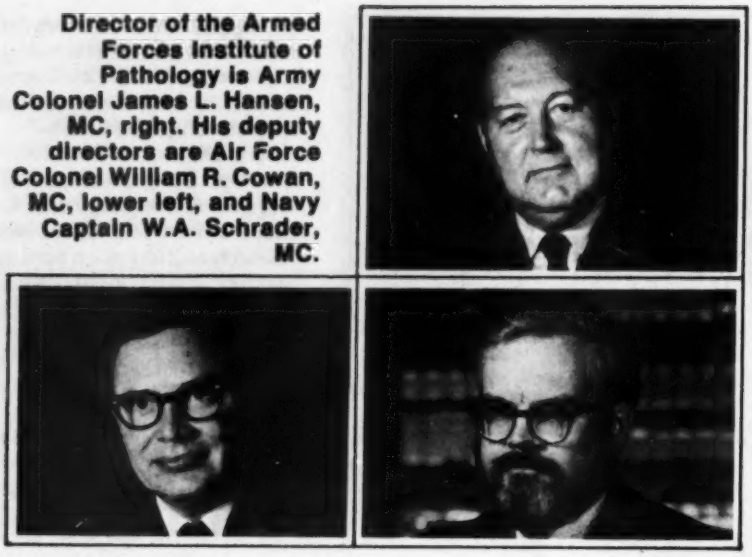
Evolution

Today's institute, with its multifaceted activity and international renown, traces its history to rather modest and closely circumscribed beginnings.

On August 1, 1862, Surgeon John Brinton received orders from the Army Surgeon General, Brigadier General William A. Hammond, "to collect and properly arrange in the 'Military Medical Museum' all specimens of morbid anatomy, both medical and surgical, which may have accumulated since the commencement of the War of the Rebellion in the various U.S. hospitals, or which may have been retained by any of the medical officers of the Army."

In the earliest days, emphasis was placed on the observation by the naked eye of the changes wrought by diseases. The adoption and improvement of the compound microscope permitted study of cells instead of tissues and gross organs.

These studies showed that basic changes in diseased tissue were cellular and the diagnosis of disease could be made with maximum accuracy from these microscopic changes. Through the microscope, organisms that caused the disease also could be identified. This ability to obtain information on cells and organisms resulted in an increasingly important role for the Army Medical Museum. But for two



Director of the Armed Forces Institute of Pathology is Army Colonel James L. Hansen, MC, right. His deputy directors are Air Force Colonel William R. Cowan, MC, lower left, and Navy Captain W.A. Schrader, MC.

decades after the Civil War, the museum continued to devote itself almost exclusively to Army medicine.

In 1888, Lieutenant Colonel John S. Billings, Museum Curator, made the educational facilities of the museum available to the civilian medical profession on a cooperative basis. In 1922 the American Registry of Pathology was founded to establish effective cooperation with civilian medicine.

The name was changed to the Army Institute of Pathology in 1946 when the museum became the central laboratory of pathology for the United States Army. On July 6, 1949, the institute was redesignated the Armed Forces Institute of Pathology, and in 1950 became the central laboratory of pathology for the Department of Defense and other Federal agencies.

The Director

Assignment as the director of the AFIP generally constitutes a four-year tour of duty and rotates among the Army, Navy, and Air Force, in that order. In view of the enormous complexity of the overall operation and the need to understand the details of every aspect, a typical director will have spent an average of eight years at the AFIP previous to his nomination for the top job. These eight years are not necessarily served continuously, and may include assignments as a resident, fellow, staff member, deputy director, etc. By the time a pathologist is ready and qualified to be nominated for the directorship, he will have become an outstanding professional and military leader and manager and will be in a position to exert influence in his field on a worldwide scale. While Navy and Air Force directors have not to date exceeded the rank of 0–6 (captain and colonel, respectively), Army directors have in the past advanced as high as major general.

The present director, Colonel James L. Hansen, Medical Corps, U.S. Army, recently expressed his views of the AFIP's role in the future:

"The institute strives to meet the challenges that grow greater each day. We are working to help meet military and civilian problems in health care through our programs in education, research and consultation—problems of disease, pollution, drug abuse, legal medicine, and superspecialization of physicians. The need for a comprehensive and high level of consultation in pathology as an adjunct to complete medical care has never been greater. It is through our cooperative programs with civilian medical institutions, the consultation reports rendered worldwide to pathologists, and in training young professional minds that the institute continues to be involved in striving for a healthy society.

"I feel that AFIP has become an indispensable institution and share with a dedicated staff in efforts to provide a pathology service that will help create a healthier way of life for both the present and future generations."

Organization

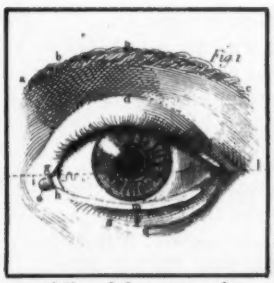
The director depends on a Board of Governors, composed of the Surgeons General of the Army, Navy and Air Force, to establish guidelines and the broad administrative and professional policies for the institute. The director and his two deputy directors, having been selected for high professional qualifications in the field of pathology, are responsible for the day-to-day operation and administration of the institute. For advice on scientific and technical matters, they call on the members of the AFIP Scientific Advisory Board of Consultants. Board members are appointed by the Secretary of the Army for terms not to exceed five years. They are selected from outstanding specialists in their respective fields and represent the major disciplines of medicine.

Associate Directors

For day-to-day advice on the scientific and professional aspects of each of the three phases of the institute's mission, the director relies on three associate directors: one each for consultation, education, and research. To keep the AFIP abreast of worldwide advances and developments in their respective areas of responsibility, the associate directors maintain professional and administrative liaison with Federal and civilian agencies, as well as with individual scientists.

a look at AFIP's mission components

CONSULTATION EDUCATION RESEARCH



The Armed Forces Institute of Pathology (AFIP) pathologist serves as the scientific consultant to physicians throughout the world by providing laboratory data essential for the diagnosis and treatment of disease. In emergency cases, where the patient's life is in danger, and time is a factor, the AFIP can provide replies to requests for diagnosis within 24 hours from the time of receipt.

The AFIP receives more than 45,000 requests for consultation service annually from pathologists throughout the world.

These many and varied requests require the diagnostic skills of the AFIP pathology team, including highly specialized pathologists and well-trained supporting staffs.

The specimens and records of the cases are added to the computerized repository upon completion of evaluation and rendition of a report to the contributor. Through computerization, all related cases can be made available for study within hours to the pathologist working on a consultation.

Education

In a constantly shrinking world, where concern for one's fellow man is paramount, the dissemination of medical knowledge is essential. The laboratory data derived from the AFIP consultation and research activities provide the basis for an ever expanding educational program serving both military and civilian physicians and technicians throughout the world.

The institute administers a large educational program attracting over 2,300 professionals annually. Included are postgraduate short courses, lectures, seminars, fellowships, residencies, and an extensive mail-order program consisting of motion pictures, gross tissue sets, lantern slide sets, microscopic slide sets, film strips and clinical/pathologic conferences.

The educational mission is supported by a Medical Illustration Service which constructs medical exhibits, provides medical art and photography, and prints scientific papers, atlases, syllabi and manuals.

This comprehensive program is international in scope, with over 200 foreign nationals studying at the AFIP each year.

Research

The AFIP research program involves both clinical and experimental

The Armed Forces Institute of Pathology provides post-graduate study in pathology for members of the medical profession from around the world.

pathological research. Through utilization of highly specialized equipment and techniques, the AFIP researcher seeks to prevent human suffering by developing new concepts leading to the prevention and effective treatment of disease and injury.

The research program, averaging 200 projects each year, is biomedically oriented to military medicine. Projects involve medical, dental and veterinary sciences, spanning both clinical and experimental investigations from laser injury to exotic tropical diseases.

The magnitude of the program is reflected by the publication of more than 200 scientific papers annually by the Institute staff.

Complex projects requiring advanced instrumentation include the areas of molecular biology, immunopathology, biophysics, biochemistry and histochemistry.

Major Components

To accomplish the Institute's mission workloads, the organization is divided into four functional areas:

- The Department of Pathology
- The Medical Illustration Service
- The American Registry of Pathology
- The Medical Museum

A few words on each will serve to illustrate their respective roles, which are mutually supportive.

The Department of Pathology

The professional staff provides definitive consultation in the diagnosis of disease to the Armed Forces, the Veterans Administration and to civilian medicine. Over 30 branches are headed by experts in all phases of pathology, including such specialized areas as forensic, radiation, dental and veterinary pathology and toxicology.

The Histopathology Laboratories Division is preeminent in its field. Technicians process all tissues sent to the AFIP for consultation. This same material is utilized extensively for teaching and research. In addition to training histologic technicians, new techniques are developed and evaluated. The staining manual developed by this Division is used throughout the world.

The Professional Records Division has the responsibility for accessions, the maintenance, retrieval and control of all cases and related materials and records. About 45,000 cases are added annually to the cases on file, which are approaching the 1½ million mark.

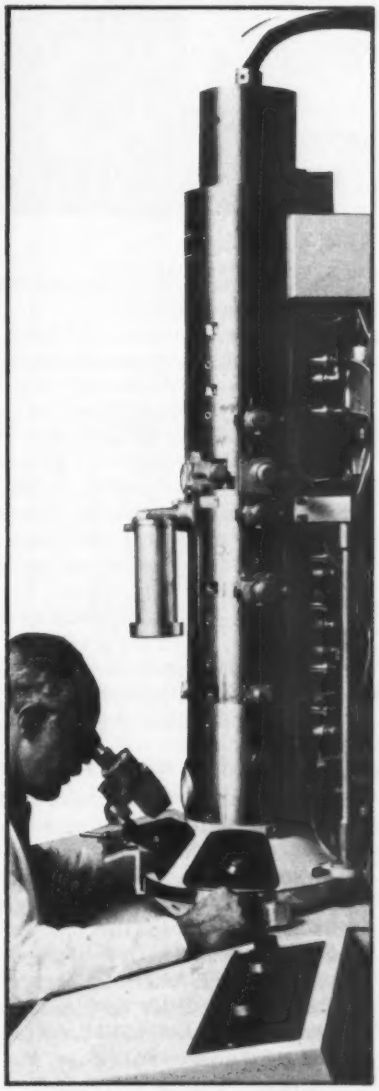
A recently adopted patient information retrieval system allows for patient accessions data to be added and stored in the computer and on 16 mm microfilm. Some 250,000 cases can be recorded in one film cartridge.

The Department of Pathology concerns itself with the following subject areas, to which separate branches of various sizes are devoted:

Skin and Gastrointestinal, Soft Tissue, Hepatic and Pediatric, Tissue Reactions to Drugs, Cardiovascular, Forensic, Toxicology, Aerospace, Marine Biopathology, Oral Tumors and General Diseases, Hematologic & Lymphatic, Pulmonary and Mediastinal, Orthopedic, Ophthalmic, Ear, Nose & Throat, Neuropathology, Genitourinary, Endocrine, and Obstetric, Gyneocologic & Breast.

Also, Histochemistry, Biophysics, Biochemistry, Immunobiology, Environmental Oral Pathology, Veterinary Pathology, Vivarium, Comparative Pathology,

Individuals in the medical professions receive a variety of opportunities for intensive study in many pathology specialties, including the scanning electron microscope (right).



Geographic Pathology, Geographic Zoonoses, Immunology & Bacteriology, Infectious Diseases, Special Mycobacterial Diseases, Viro-Pathology, Radiologic Pathology, and Radiation Pathology.

The Medical Illustration Service

The Medical Illustration Service collects, prepares, duplicates, publishes and exhibits illustrations of wounds, injuries and diseases of medico-military importance. It is organized into four divisions: Scientific Illustration, Photography, Printing, and Training Aids.

The service designs and produces illustrations, lantern slides, transparencies, operable models, moulages, and other visual media. It loans motion and still pictures, lantern slides and teaching sets, and operates photographic laboratories and facilities for producing exhibits, training aids, and the fabrication of instruments.

The staff of the Medical Illustration Service includes experts in photography, medical art, exhibit design, sculpture, machinery, model

The AFIP Medical Museum contains a fountain with three fiberglass leaves entwined by serpents which represents the three services working together in the field of medicine. In the histopathology laboratories, (right) tissue specimens are prepared and stained for slides.

COMMANDERS DIGEST

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making, electronics, pictorial research, graphics and printing.

Each year more than 350,000 photographic items are produced. More than 200 scientific exhibits are displayed yearly at national and international meetings. These exhibits are viewed by millions of persons and have won 230 awards since 1947.

More than 3,500 illustrations are prepared, and 14,000 motion pictures and 3,500 lantern slide sets are loaned each year.

The fascicles of the Atlas of Tumor Pathology, which are printed by the Medical Illustration Service, have received worldwide recognition for their high standard of graphic art.

The American Registry of Pathology

The American Registry of Pathology is a cooperative medical research and educational activity between the institute and the civilian medical profession. It consists of 26 registries under the partial sponsorship of civilian organizations. The sum of these registries, the American Registry of Pathology, is under the joint auspices of Universities Associated for Research and Education in Pathology, Inc. (UAREP) and the AFIP.

Each registry correlates clinical and pathologic material from one field of pathology. Particular attention is given to the natural history of the disease and various therapeutic influences. More than 20,000 well-documented cases are registered each year and nearly 300,000 cases have been selected for their educational value. The material is used for the preparation of many scientific papers and special studies.

More than 30,000 atlases, syllabi and manuals are prepared and sold annually by the American Registry of Pathology including the fascicles of the Atlas of Tumor Pathology.

The Medical Museum

On the 109th anniversary of its founding, the Medical Museum was reopened on May 21, 1971, in a new wing of the AFIP building. The museum was officially opened in 1862, but it was not until after the Civil War that it became a popular attraction. In 1867 it was relocated in Ford's Theatre, which was remodeled to house the museum following President Lincoln's assassination. The AFIP Annex at 7th Street and Independence Avenue, the museum's fifth home, was closed on

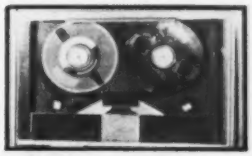
October 4, 1968, to provide space for a new Federal art museum.

The public museum area is divided into four specialized halls of exhibits. The Hammond Hall of Pathology displays plastic mounted tissue arranged in an organ system. The Brinton Hall of History features the history of pathology and the role of the institute in furthering advancements in the field of pathology. The Billings Hall of Instruments contains the most comprehensive collection of microscopes in the world, ranging from an early 1590 model to the latest electronic microscope of today. Finally, the Silliphant Hall of Current Events features multimedia exhibits of timely and topical interest on such subjects as drug abuse, air pollution, venereal disease, automobile accidents, food poisoning, etc.

The nonpublic area of the museum contains study facilities for visiting pathologists, designated as the Center for Advanced Study in Pathology (CASP). This 16-room facility provides an opportunity for study of the institute's rare medical specimens.

The public area of the Medical Museum is open to visitors from 9 a.m. to 5 p.m., seven days a week.

The Use of Computers In Pathology



The Armed Forces Institute of Pathology (AFIP) is a leader in the use of computers in anatomic pathology. In addition to using its computer as an index of the 1½ million cases in the AFIP files, methods of using the computer to aid in making diagnoses are being explored.

With the proper programming and professional input, a pathologist will be able to make the best possible examination of a specimen or slide and to properly evaluate each feature. He will also be able to consider all possible conditions which have these features, and to list the conditions in their order of probability. This will not diminish the pathologist's importance in making diagnoses, but will provide him access to all the available literature in his specialty. He will no longer be forced to rely solely on his own knowledge and memory.

Someday it might even be possible for a pathologist on the West Coast to telephone the AFIP and obtain a consultation by having a scanning device look at a slide or a tissue specimen. This is still far in the future, but definitely within the realm of possibility.

AFIP's Influence In World Medicine

Each year more than 40 nations send medical personnel to work and study at the Armed Forces Institute of Pathology. They attest to AFIP's influential role in world medicine.

The institute also has important functions within such international organizations as the Joint Committee on Aviation Pathology and the World Health Organization. The committee studies the role pathology plays in flight safety. Committee members from the United Kingdom, Canada and the United States meet and maintain records at the institute.

The World Health Organization has designated the institute as the International Reference Center for Soft Tissue Tumors, for Genitourinary Tumors, and Comparative Oncology. The importance the institute attaches to international pathology is demonstrated in its Geographic Pathology Division. Staff members from the division are assigned to medical agencies in Africa, Latin America and Asia.

PATHOLOGIST:

What's a Pathologist?

Ask the man in the street, and you'll get a surprising variety of answers.

"He looks at bugs through a microscope."

"He cuts up dead people."

"He sits in the hospital basement and only talks to other doctors, never to patients."

"He is a doctor with a charming slab-side manner."

Strangely enough, these off-the-top-of-the-head impressions, while basically uninformed, are in themselves more or less accurate. Which goes to show that a pathologist, while he is many things to many people, may in fact be many things combined in a single individual. Then again, he may be a superspecialist, preoccupied with a minute, yet vitally important aspect of health care. What is surprising, however, is the fact that the true range and impact of the pathologist's professional activities are largely unknown to the general public, even though the accuracy of his diagnosis and the subsequent management of a patient's care are often of life-or-death significance.

As our man in the street correctly observed, the patient has essentially no personal contact with the pathologist, and he therefore gives very little, if any, thought to the fact that there is a man with a supporting staff working for him behind the scenes—a group of devoted, highly trained and competent people who daily confront the awesome responsibility of making the right decision.

Pathologists as a group seem to enjoy strict anonymity—perhaps as a result of neglect by the entertainment media. About the only work of fiction in recent years featuring pathology and its practitioners is "The Final Diagnosis" by Arthur Hailey.

True, a specialty like surgery appears more glamorous and dramatic to the lay public—but where would the surgeon be without the pathologist's support?

As the physician whose specialty is the identification of disease, the pathologist stands at the center of scientific medicine as it is practiced today. Other physicians depend on the pathologist and his laboratory for confirmation of their diagnoses of disease such as cancer, diabetes, anemia, appendicitis, venereal disease, mononucleosis, and hundreds of other conditions. That's why the pathologist is often called "the doctor's doctor."

Because the field is so large and complex, the practice of pathology is divided into two major areas: **anatomic pathology,** which deals with the gross microscopic structural changes caused in tissue by disease, and **clinical pathology**, which is concerned with the chemical and physiologic variations of disease as seen in body fluids and tissues. Many physicians who specialize in pathology are certified for the practice of both anatomic and clinical pathology. Some are also certified in the subspecialties of forensic pathology, hematology, neuropathology, medical chemistry and medical microbiology.

In the hospital, the pathologist works side by side with the patient's

"A doctor with a charming slab-side manner"

physician, serving as his scientific consultant in diagnosis and day-to-day treatment. The pathologist is often consulted when an unexpected situation is encountered in surgery, always when a malignant tumor is suspected. Where the cause of death is in doubt, it is to the pathologist's post-mortem examination (necropsy) that the physician, the family and the community look for the final diagnosis.

In the clinical laboratory, inside or outside the hospital, the pathologist oversees and coordinates the performance and evaluates the medical significance of an increasingly wide range of diagnostic and screening tests for scientific evidence of disease producing conditions. For actual performance of most tests, he relies largely on the specialized skills of professional associates in laboratory medicine including clinical chemists, microbiologists, immunohematologists, histotechnologists, cytotechnologists and medical technologists. These specialties, in turn, rely largely on the technological assistance of an increasingly versatile array of precision instruments. More than 80 percent of the most frequently used tests can now be performed swiftly and accurately by mechanized equipment.

Two very special concerns of the pathologist are the blood bank and the cytology laboratory. The transfusion of blood is a life saving procedure, but great care must be taken in the laboratory to be certain that the donor's blood is properly matched with that of the patient. The cytology laboratory is concerned with the diagnosis of malignant tumors and other abnormalities through the study of exfoliated cells obtained from the patient by a variety of methods. Best known of these, perhaps, is the Papanicolaou ("Pap") smear screening test that has resulted in greatly reduced deaths from uterine cervical cancer.

The pathologists rely on the clinical specialists. The specialists in turn rely largely on the technological assistance of an increasingly versatile array of precision instruments. Here a Navy hospitalman adjusts the fluid changer, which adjusts and changes the various solutions in which the specimen is to be viewed.

PATHOLOGY

The SCIENTIFIC FOUNDATION for MEDICAL PRACTICE

Pathology is the science that deals with the causes, mechanisms of development and effects of disease. It seeks to determine the actual nature of disease—not just the physical symptoms or how it feels to the patient, but what disease is—what visible or measurable changes it produces in the cells, fluids, and life processes of the entire body. Pathology is the scientific foundation for medical practice.

As the basic biological science most closely related to clinical medicine and the clinical discipline closest to basic biology, pathology is often called the bridge between basic science and medicine. It links the basic science of anatomy, biochemistry, genetics, microbiology, physiology and pharmacology with the clinical sciences such as internal medicine, surgery, obstetrics and gynecology, pediatrics and radiology.

The range of pathology is as great as the diversity of life. The study and practice of pathology, therefore, are limited only by the curiosity, imagination, intelligence and ingenuity of the pathologist.

History

Historically, pathology in this country was part of the physician's practice. Interesting specimens were collected and preserved to be displayed in pathological museums or pathological cabinets, frequently associated with hospitals or medical societies, primarily for teaching purposes. The first academic chair limited to the field of pathology was established at Harvard in 1847.

However, for many years to come pathology was practiced in hospitals as an adjunct to the individual departments requiring its services. Laboratories for blood chemistry, hematology, and later blood banking were commonly scattered among the clinical departments of the medical center. Even surgical pathology was delegated to departments of surgery, gynecology, and urology.

With rapidly accumulating knowledge in the field, it became clear that these activities required centralized direction and that the increasingly more complex procedures should be delegated to full-time specialists in laboratory medicine. A turning point in the overall status of pathology occurred in 1919, when the American College of Surgeons required adequate laboratory facilities in all accredited hospitals. From this time on, the number of pathologists who concerned themselves with clinical as well as anatomic pathology increased rapidly. The American Society of Clinical Pathologists was founded in 1922 to promote wider application of clinical laboratory methods in the diagnosis of disease, to stimulate research in the field, and to establish uniform standards.

Service to Humanity

Hopefully, the foregoing discussion on the far-reaching objectives of the field of pathology and the wide range of activity of its practitioners will have served to introduce the reader to the fundamental role and status of this science within the overall Health Care picture. The dominant goal is to be of service to humanity, and the means of attaining that goal is to proceed along three main avenues of endeavor: consultation, education, and research.

The Department of Defense, well aware of the necessity for providing this competence in support of the overall health care for military and other governmental personnel and their dependents, operates a truly unique medical installation on the grounds of Walter Reed Army Medical Center in Washington, D.C. The facility has in fact long transcended its initial role in support of United States military medicine. It stands alone as a medical resource which extends its facilities and services to pathologists, military and civilian, governmental and private, U.S. and foreign—a medical institution known and respected among pathologists and other physicians all over the world for the quality of its service to humanity.

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